REMARKS

Favorable consideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-15 are presently pending in this application, Claims 6-12 having been withdrawn from further consideration by the Examiner, Claims 1-5 having been amended, and Claims 13-15 having been newly added by the present amendment.

In the outstanding Office Action, the specification was objected to for informalities; Claims1-5 were rejected under 35 U.S.C. §112, second paragraph, for being indefinite; Claims 1 and 2 were rejected under 35 U.S.C. §102(b) as being anticipated by Singh (U.S. Patent 6,064,710); Claims 1 and 2 were rejected under 35 U.S.C. §103(a) as being unpatentable over either Wells et al. (U.S. Patent 4,827,139) or Lusk et al. (U.S. Patent 4,666,659) in view of either one of Singh or DE 2835392 C2 (hereinafter "DE '392"); and Claims 3-5 were rejected under 35 U.S.C. §103(a) as being unpatentable over either one of the Wells et al.-Singh combination or the Wells et al.-DE '392 combination, and further in view of Horning (U.S. Patent 3,036,964).

In response to the objection to the specification, the noted informalities have been corrected herein.

With regard to the rejection under 35 U.S.C. §112, second paragraph, Claims 1-5 have been amended to clarify the subject matters recited therein. Thus, Claims 1-5 are believed to be in compliance with the requirements of the statute. Also, these claim amendments are merely cosmetic and are not believed to narrow the original scope of these claims. If, however, the Examiner disagrees, the Examiner is invited to telephone the undersigned who will be happy to work in a joint effort to derive mutually satisfactory claim language.

Furthermore, newly added Claims 13-15 find clear support in the original specification, claims and drawings. For example, Claims 13 and 14 are supported by original

Claims 5, and Claim 15 is supported by original Claim 1. Hence, these new claims are not believed to raise a question of new matter.

Briefly recapitulating, Claim 1 of the present invention is directed to a cask including a basket including a plurality of rectangular plate members capable of absorbing neutrons and alternately piled up vertically, the plurality of rectangular plate members each having a plurality of cutting sections for mutually engaging the plurality of rectangular plate members, the rectangular plate members forming a plurality of cells, the basket having an outer shape that has an angular cross section with step portions, a barrel main body which shields γ rays and has an inner side forming a cavity, the cavity having a cross section which corresponds with the angular cross section of the basket, a neutron shielding body provided in an outer periphery of the barrel main body, wherein a spent fuel assembly is stored in each of the cells of the basket inserted in the cavity. By providing a barrel main body having such a cavity, the number of cells to be inserted in the cask can be increased, while the mass of the barrel main body can be decreased without increasing the size of the cask. At the same time, the ability to shield γ ray and neutron is maintained. Furthermore, the heat conductivity between the basket and barrel main body is improved since the contacting area between the basket and the barrel main body is increased.

Horning discloses a nuclear reactor apparatus. Nevertheless, Horning does not teach a barrel main body which shields γ rays and has an inner side forming a cavity, the cavity having a cross section which corresponds with the angular cross section of the basket, as recited in amended Claim 1. Instead, Horning discloses a nuclear reactor having a substantial space between the barrel main body and the cells composing the basket, i.e., the shape of the

cavity does not correspond with the outer shape of the basket.[1] Therefore, the structure recited in Claim 1 is distinguishable from Horning.

Likewise, Singh, Wells et al., Lusk et al. and DE '392 disclose an apparatus for transporting nuclear fuel rods, a cask for a spent nuclear fuel basket, a shipping container for spent nuclear fuel, and a storage frame for nuclear reactor fuel elements, respectively; however, none of those references teaches a barrel main body which shields γ rays and has an inner side forming a cavity, the cavity having a cross section which corresponds with the angular cross section of the basket, as recited in amended Claim 1. On the other hand, Singh, Wells et al., and Lusk et al all disclose a substantial space between the barrel main body and the cells composing the basket,[2] and DE '392 only discloses a storage frame made of intersecting pairs of sheets with slot joints at intersections. Thus, the structure recited in Claim 1 is also distinguishable from Singh, Wells et al., Lusk et al. and DE '392.

Because none of Horning, Singh, Wells et al., Lusk et al. and DE '392 discloses the barrel main body as recited in Claim 1, even the combined teachings of these applied references would not render the structure recited in Claim 1 obvious.

For the foregoing reasons, Claim 1 is believed to be allowable. Furthermore, since Claims 2-5 and 13-15 ultimately depend from Claim 1, substantially the same arguments set forth above also apply to these dependent claims. Hence, Claims 2-5 and 13-15 are believed to be allowable as well.

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[1] See Horning, Figure 1.
[2] See Singh, Figure 18; Lusk et al., Figure 3; and Wells, Figure 3.

In view of the amendments and discussions presented above, Applicants respectfully submit that the present application is in condition for allowance, and an early action favorable to that effect is earnestly solicited.

Respectfully submitted,

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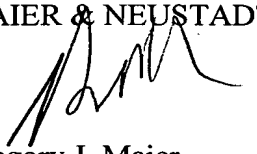

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IN THE SPECIFICATION

Please replace the paragraph at page 1, line 10, through page 2, line 1, with the following text:

--A nuclear fuel assembly which finishes combustion in a terminal phase of a nuclear fuel cycle and can not be used is called as a spent nuclear fuel. Since the spent nuclear fuel contains a radioactive material such as an FP (fission product) or the like, it is necessary to thermally cool, so that the spent nuclear fuel is cooled by a cooling pit in a nuclear power plant for a predetermined period (one to three years). Thereafter, the spent nuclear fuel is received in a cask corresponding to a shielded vessel, and transported to a reprocessing facility by a truck or the like so as to be stocked. When the spent fuel assembly is received within the cask, a holding element having a grid-like cross section called as a basket is used. The spent fuel assemblies are inserted in a plurality of cells corresponding to receiving spaces formed in the basket one by one, whereby it is possible to secure a proper holding force against a vibration during the transportation or the like.--

Please replace the paragraph at page 5, lines 5-18, with the following text:

--On the contrary, since an amount of radiation leaking out of the cask is restricted by a total amount of the neutrons and the γ rays, it is sufficient to reduce a thickness of the barrel main body 501 in order to [intend to] lighten the cask 500. However, since it is necessary to constitute the γ rays shield, a thickness which secures a γ ray shielding function is required in

a side of the barrel main body 501. Further, the cask 500 mentioned above is structured such as to be capable of receiving sixty nine fuel assemblies which have never been achieved by the conventional art, however, when the diameter of the barrel main body 501 is reduced in the structure for the purpose of achieving a predetermined weight, the receiving number of the spent fuel assemblies is reduced.--

Please replace the two paragraphs at page 6, line 12, through page 7, line 14, with the following text:

--The spent fuel assembly generates a decay heat as well as generating a radiation. The spent fuel assembly is received within the cell of the basket, however, since the inner side of the cavity of the barrel main body is formed in the shape aligning with the outer shape of the basket, the plate-like member (in particular, the square cross sectional shaped portion) in the outer side becomes in a state of being in contact with the inner surface of the cavity, when the basket is inserted within the cavity. Further, since the shape within the cavity is aligned with the outer shape of the basket, a space between the basket and the cavity [enable to be lost or made very little] does not exist or is made very small. Accordingly, the decay heat is effectively conducted from the basket to the barrel main body via a helium gas introduced into the inner section or directly via the contact portion.

Further, since the space within the cavity is made very little or it is not there at all, it is possible to make an outer diameter of the barrel main body small. On the contrary, when the outer diameter of the barrel main body is made in the same manner of the barrel main body as shown in Fig. 25, it is possible to form more cells. In this case, in the contact state mentioned above, it is not necessary that the inner surface of the cavity and the outer surface of the basket are completely and always in contact with each other, and the contact state includes an instance in which a slight gap exists or [the contact is temporarily cancelled] the inner surface

of the cavity and the outer surface of the basket are temporarily detached. Further, the plate-like member mentioned above includes a hollow structure shown in a third embodiment.--

Please replace the paragraph at page 8, lines 5-20, with the following text:

--Since the basket is integrally cast, and the inner shape of the cavity in the barrel main body is aligned with the outer shape of the basket having the square cross sectional shape, the outer surface of the basket becomes in the state of being in contact with the inner surface of the cavity in the same manner as mentioned above. Further, since the shape within the cavity is aligned with the outer shape of the basket, a space between the basket and the cavity [enable to be lost or made very little] does not exist or is made very small. Accordingly, the decay heat is effectively conducted from the basket to the barrel main body via a helium gas introduced into the inner section or directly via the contact portion. Further, it is possible to reduce the outer diameter of the barrel main body. On the contrary, when the outer diameter of the barrel main body is made in the same manner that of the barrel main body as shown in Fig. 25, it is possible to form more cells.--

Please replace the paragraph at page 12, lines 1-18, with the following text:

--Fig. 1 is a perspective view which shows a cask according to a first embodiment of the present invention. Fig. 2 is a cross sectional view in an axial direction of the cask shown in Fig. 1. Fig. 3 is a cross sectional view in a diametrical direction of the cask shown in Fig. 1. A cask 100 according to the first embodiment is structured such that an inner surface of a cavity 102 of a barrel main body 101 is machined in conformity with an outer peripheral shape of a basket 130. The machining of the inner surface of the cavity 102 is milled by an exclusive working apparatus mentioned below. The barrel main body 101 and a bottom plate 104 correspond to forged products made of a carbon steel having a γ ray shielding function.

In this case, in place of the carbon steel, a stainless steel may be employed. The barrel main body 101 and the bottom plate 104 are bonded [according to a] by welding. Further, in order to secure a sealing performance as a pressure vessel, a metal gasket [is] may be provided between a primary cover 110 and the barrel main body 101.--

IN THE CLAIMS

Please amend Claims 1-5 and add new Claims 13-15 as follows:

--1. (Amended) A cask comprising:

a basket [having] including a plurality of [square shaped cross section, wherein cutting sections are provided in both edges of] rectangular plate[-like] members [having a neutron] capable of absorbing [performance] neutrons and [said plate-like members are] alternately piled up vertically, the plurality of rectangular plate members each having a plurality of cutting sections for mutually engaging the plurality of rectangular plate members, the rectangular plate members forming a plurality of cells, the basket having an outer shape that has an angular cross section with step portions [in such a manner as to mutually insert said cutting sections to each other];

a barrel main body which shields γ rays and [forms] has an inner side forming a [of] cavity, the cavity [in a shape aligning with said] having a cross section which corresponds with the angular cross section of the basket; [and]

a neutron shielding body [arranged] provided in an outer periphery of [said] the barrel main body,

wherein a spent fuel assembly is stored in each of the cells of the basket inserted in [said] the cavity.

2. (Amended) The cask according to claim 1, wherein [a part within said] only portions of the cavity [is formed in a shape aligning with the outer shape] have the cross

section that corresponds with the angular cross section of [said] the basket.

3. (Amended) The cask according to claim 1, [wherein] further comprising a plurality of dummy pipes [pipe is further] provided along and in contact with the step[, a portion] portions of the basket [having a surplus thickness], wherein the [of the barrel main body within said] cross section of the cavity [is aligned with said] corresponds with a cross section of an outer shape formed by the plurality of dummy [pipe] pipes and the basket in contact with each other, and [said] the plurality of dummy [pipe is] pipes are inserted within the cavity together with the basket[in a state of being in contact with said plate-like member].

4. (Amended) The cask according to claim 3, wherein both ends of each of the plurality of [said] dummy pipe are [further] closed.

5. (Amended) The cask according to claim 4, wherein the plurality of dummy pipes each includes a heat conduction medium therein[such as a helium gas or the like is sealed within the dummy pipe having both ends closed].

13.- 15. (New) --